

REMARKS

The present response is intended to be fully responsive to each of the Examiner's objections/rejections. After a careful review of the cited references, Applicant requests favorable reconsideration in view of the remarks below.

Claims 1-35 were initially presented for examination. Claims 22-35 have been withdrawn from consideration as being drawn to a non-elected invention. Applicant has amended claims 1-2, 5-7 and 20-21, and canceled claims 4 and 17. Applicant has also added new claims 36-41, each of which ultimately depends from independent claim 1 and is also fully supported by the specification as originally filed. Claims 1-3, 5-16, 18-21 and 36-41 are now pending, of which claims 1 and 2 are independent.

In addition, Applicant has amended the Specification to correct a typographical error, as shown above (Applicant also made the same amendments in claims 20-21).

In paragraph 3 of the Office Action, the Examiner rejected claims 1-19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0151453 (Laletin) in view of U.S. Patent No. 5,990,654 (Skibinski). To establish a *prima facie* case of obviousness under § 103, the cited references must teach or suggest all the claim limitations. (MPEP § 2142).

Applicant submits that the combination of Laletin and Skibinski fails to teach or suggest “receiving a pulsed motor drive signal from the pulse generator,” “obtaining compensator current and compensator voltage measurements ... generated in part due to the pulsed motor drive signal,” “generating compensator reference values based on a characteristic line impedance of a line coupling the pulse generator to the motor, a propagation delay parameter of the line, and the compensator current and compensator voltage measurements,” and “controllably adjusting a

compensator current source and a compensator voltage source in response to error signals computed from the compensator current and compensator voltage measurements and the compensator reference values in order to generate a compensator motor drive signal,” as in claim 1 and similarly in claim 2.

Laletin teaches a pulse width controlled duty cycle generator (shown in Figure 1) including an integrator 10, a voltage controlled current source 20, a capacitor 30, a reset switch 40, an invert gate 50, a reference pulse generator 60, and an output clock buffer 70. The reference pulse generator 60 develops a periodic output signal consisting of constant width positive pulses. In response to each rising edge transition, the reset switch 40 forces the voltage across capacitor 30 to zero, causing the output of the gate 50 to undergo a fast transition to a logic HIGH state. The output of the gate 50 alternates between logic high and low, such that the interval between each rising edge transition and the subsequent falling edge defines a positive pulse. (para. 0036-0038).

Laletin teaches by virtue of negative feedback within the circuit, the integrator 10 operates as a control amplifier to output a value required to force the current source 20 to create a duty cycle controlled clock at the output of the invert gate 50. The invert gate 50 outputs to the clock buffer 70 to provide the duty cycle controlled clock. (para. 0046 and fig. 1).

Laletin does not teach or suggest “generating compensator reference values based on a characteristic line impedance of a line coupling the pulse generator to the motor, a propagation delay parameter of the line, and the compensator current and compensator voltage measurements,” as in claim 1. Laletin does not teach the same configuration as the circuit recited in claim 1, and thus does not teach generating compensator reference values in the same manner.

In addition, Laletin does not teach “controllably adjusting a compensator current source and a compensator voltage source in response to error signals computed from the compensator current and compensator voltage measurements and the compensator reference values in order to generate a compensator motor drive signal,” as in claim 1. The Examiner cited to paragraph 0022 in Laletin as allegedly teaching the “controllably adjusting” limitation. That paragraph states that the pulse width controlled duty cycle generator is linearly responsive to an input voltage and provides continuously adjustable control of the width of a periodically repeating digital pulse, thereby achieving a linear voltage to duty-cycle ratio transfer function. (para. 0022). However, Laletin does not mention adjusting current and voltage sources in the manner as recited in claim 1, because Laletin does not mention determining error signals based on measured and reference signals. Furthermore, Laletin does not teach generating a signal to drive a motor, but rather generating a duty cycle controlled clock signal.

The Examiner cited to Skibinski as teaching a motor controlled by a PWM controller, and stated that it would have been obvious to modify the method of Laletin to drive a motor as taught by Skibinski to control power to the motor. Applicant submits that Skibinski does not make up for the shortcomings of Laletin. Skibinski uses transmission line theory to compute control signals including a policy to switch on-and-off an RLC circuit. However, Skibinski does not teach the same claim limitations within claims 1 and 2 that are missing from Laletin. Because the combination of Laletin and Skibinski fails to teach or suggest all claim limitations of either independent claims 1 or 2, the combination does not render claims 1-3, 5-16 and 18-19 obvious. Furthermore, newly added claims 36-41 depend from claim 1, and thus are not rendered obvious for the same reasons.

In paragraph 4 of the Office Action, the Examiner rejected dependent claims 20-21 under 35 U.S.C. § 103(a) as being unpatentable over Laletin in view of Skibinski as applied to claim 2 above, and further in view of U.S. Patent No. 5,526,252 (Erdman). The Examiner cited the Erdman reference for teachings related to propositional integral derivative controllers and propositional integral controllers. Applicant submits that Erdman does not teach the same claim limitations within claim 2 that are missing from the combination of Laletin and Skibinski. Because the combination of Laletin, Skibinski and Erdman fails to teach or suggest all claim limitations of independent claim 2, the combination does not render claims 20-21 obvious.

Applicants respectively submit that, in view of the remarks above, all of the pending claims are allowable over the cited references. Applicants therefore respectfully request such action. The Examiner is invited to call the undersigned at (312) 913-3331 with any questions or comments.

Respectfully submitted,

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